

Edgar T. Wherry and his Contributions to Pteridology¹

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When he first became interested in ferns, Dr. Wherry was thirty years old. His background had been in chemistry and geology, and at the time he was an assistant curator in mineralogy at the U.S. National Museum. Some amateur botanists took him to see a patch of the walking fern, *Camptosorus rhizophyllus*, where it was growing on gneiss, and he became curious about its soil requirements. This led to his first publication on ferns "A Chemical Study of the Habitat of the Walking Fern" in 1916. After that Wherry became an expert on hydrogen-ion concentrations in the soils of eastern United States ferns, and he also broadened out into questions of their geography, ecology, and systematics. By the end of his career he had become an authority on North American pteridophytes north of Mexico.

In 1917, Wherry transferred to the Department of Agriculture, where he came under the influence of F. V. Coville, the Chief Botanist, who encouraged him in the study of plants. By 1930, Wherry was prominent enough in his new profession to be invited to join the Botany Department of the University of Pennsylvania. He accepted this opportunity, which was ideal for him because it represented a return to his alma mater and to his home city of Philadelphia. Wherry taught at the University until his retirement in 1955. He stayed active for many years longer than most botanists; he continued to take field trips well into his 80's and was still writing letters as late as his 90's. Only in the last few years before his death at 97 on 19 May 1982 did he lose touch.

Wherry was very active in the American Fern Society, and three-fourths of his pteridophyte publications were in the "American Fern Journal." He was President of the Society from 1934 to 1939, and he also took charge of preparing a cumulative 25-year index to the "Journal." When Maurice Broun wrote his "Index to the Ferns and Fern Allies of North America" (1938), Wherry supplied the habitat and range data for most of the species. After becoming discouraged by the poor quality of the manuals then available for identifying pteridophytes, he published one himself entitled "Guide to Eastern Ferns" (1937), which, together with the second edition, sold more than 6000 copies and did much to stimulate the popularity of ferns among naturalists and botanists. Later he wrote another valuable guide, this one for the southeastern United States. The royalties from his field manuals were donated to the American Fern Society.

Wherry did not become a major botanist of his time; he was not involved in any of the "big ideas" such as biosystematics, cytotaxonomy, and phylogeny that burgeoned during his lifetime. His approach to the study of plants was deficient in such

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¹A series of papers in tribute to Edgar T. Wherry (19 Sep 1885–19 May 1982) was published in *Amer. Fern J.* 66:33–80. 1976. Biographical notes have been published in *Fiddlehead Forum* 9:32–33. 1982 and by Prof. Wagner in *Bull. Torrey Bot. Club* 109:545–548. 1982. An obituary for Dr. Wherry has been published in *Bartonia*, 49:1–5. 1983, the journal of the Philadelphia Botanical Club.

subjects as morphology, anatomy, cytology, and physiology, and he used the laboratory and the microscope very little in his research. He functioned primarily as a "field naturalist," as evidenced by his teaching and his publications. Over 40% of his fern bibliography dealt with geographical distributions, especially range extensions and reports of what he encountered on his numerous exploring trips. Among the many individuals who accompanied him on his pteridological field expeditions were Harry W. Trudell, J. E. Benedict, and myself. For over a third of a century, from high school student to university professor, I had the good fortune to go exploring from time to time with Wherry and to absorb his ideas of pteridophyte ecology.

In the "Fern Guide" he wrote as follows: "Sometimes . . . a fern student may have the 'thrill that comes once in a lifetime' by discovering a species in an area where it had not previously been found." Wherry passed his love for finding rare pteridophytes to others, and when the University of Virginia Mountain Lake Biological Station began its pteridology course in 1962, Wherry wrote to the class these inspiring words: "To the Mountain Lake Chapter, F. F. A. (Future Ferners of America) Greetings: At last a real study of the ferns of Mountain Lake is under way. . . . Many range extensions are to be expected there. Congratulations on yours!" He was so right—that first class and the subsequent ones (including the latest in 1982) made numerous range extensions of species in eight genera. The success of field pteridology courses everywhere in the United States, especially at Lake Itasca, MN, Highlands, NC, and at Flathead Lake, MT, owes a lot to Wherry's teaching about the roles of soil requirements and indicator species.

Wherry's most significant contributions to the study of fern distribution and ecology are those concerned with pH requirements, the subject which originally stimulated his interest in ferns. He helped to design simple kits for making field tests of soil acidity, and he showed, for example, that certain traditional reports of species growing on particular rock types were wrong. One author copied another that *Asplenium bradleyi* grows on limestone, and it took Wherry years to straighten this out and to convince pteridologists that this species is confined to acidic rocks. Thanks to his efforts to interest botanists in pH, it has become standard today for field workers to specify rock and soil types upon which plants grow. And if we wish to find a particular species, we first locate the proper substrate. We know now that it would be practically impossible for *Asplenium montanum* to be found growing beside *A. ruta-muraria*; their edaphic preferences are too different.

Oddly, Wherry paid little attention to the positive effects of disturbance and succession on pteridophytes, even though his viewpoint in general was broadly ecological. He did not seem to appreciate how influential upsets such as floods, fires, and grazing may be in enhancing the abundance and spread of many species, including botrychiums, certain dryopterids, and lycopods. Often, when a certain species disappeared from its habitat, Wherry would attribute it to vandalism or over-collecting when it was more probably a matter of simple succession.

When he tried, in his greenhouse, to duplicate the natural growth conditions of saxicolous ferns by faithfully assembling the appropriate rocks, he almost invariably failed. Had he only known what we now know, namely that most rock ferns can

grow merely in soil in pots, controlling the pH by simply mixing in limestone chips or sphagnum peat, he could have learned much more about the characters of rock ferns by culturing them side-by-side under uniform conditions. Practically everything he knew about the species he studied came from field observations.

Wherry's main contribution to pteridophyte taxonomy involved detecting hybrids in the wild. He was opposed to the wanton designation of trivial forms and varieties as illustrated by Fernald in "Gray's Manual" (1950), and he was effective in steering serious fern students away from this. His argument in "The Fern Guide" (1961) was that "since these mostly occur in association with typical plants—indeed often arising from the same rootstocks—they are not named." He distinguished between geographical varieties (what some botanists today call subspecies) and true species, as illustrated by his treatment of the decompound species of *Dryopteris*, such as *D. spinulosa* (= *D. carthusiana*) and *D. intermedia*, which by Fernald and his associates had been interpreted as varieties, *D. spinulosa*, typical variety, and *D. spinulosa* var. *intermedia*. He developed his concepts on the basis of studies of natural populations, long before modern experimental and biochemical techniques were available to confirm them.

Together with W. D. Gray, Wherry presented illustrations of intermediates, which he interpreted as hybrids, between long recognized species of spleenworts. Apparently, however, neither Gray nor Wherry was aware, or even suspected, that two of the most important of the species then recognized, *A. ×bradleyi* and *A. ×pinnatifidum*, were hybrids themselves (Wagner, W. H., Jr., *Evolution* 8:103–118, 1954). Both of these men, on the contrary, accepted the hybridity of the fertile *A. ×ebenoides* from Alabama. The most interesting of the hybrids first recognized by Wherry is *A. ×trudellii* (*A. montanum* × *pinnatifidum*, a beautiful example of hybrid vigor in a "sterile hybrid" which evidently can reproduce by unreduced spores. Wherry's work on *Asplenium* is honored in the name *A. ×wherryi* D. Smith, the backcross of *A. ×bradleyi* to *A. montanum*.

Under *Dryopteris* he distinguished and/or named a number of hybrids which since have become important in the genome analysis of the basic species of eastern American wood ferns. Some of these are common ferns widespread in forests and swamps. They include *D. ×slossonae* (*D. cristata* × *marginalis*), *D. ×triploidea* (*D. intermedia* × *carthusiana*), and *D. ×benedictii* (*D. clintoniana* × *carthusiana*). What he named *D. ×leedsii* and interpreted to be *D. goldiana* × *marginalis* has since turned out to be *D. celsa* × *marginalis* (Wagner, W. H., Jr., Virginia Polytech. Inst. State Univ. Res. Div. Monogr. 2:147–192, 1970). His greatest difficulties with wood ferns involved the taxa resembling *D. ×clintoniana*, the same ones that cause us trouble today. He nonetheless had a sharp eye for them and was the first person to recognize as distinct *D. ×australis* (*D. celsa* × *ludoviciana*), although for good reasons at the time he initially interpreted it as a southern variety of *D. clintoniana*. His contributions to our knowledge of *Dryopteris* hybrids are commemorated in the name *D. ×neo-wherryi* Wagner, which is the true hybrid of Goldie's Wood Fern and the Marginal Wood Fern.

Scientifically, Wherry's influence on American pteridology was substantial. Many of today's pteridologists are indebted to his teachings as well as his inspiration. His

major contributions involved his investigations of the pH reactions of soils, distribution patterns, and his studies of various taxa, especially spleenworts and wood ferns. The American Fern Society is indebted to him for his help in many ways over more than three decades. For the general public, Wherry's field manuals and his many lectures and guided trips for amateurs helped engender a widespread enthusiasm for the natural history of pteridophytes.

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